Inside Wallops

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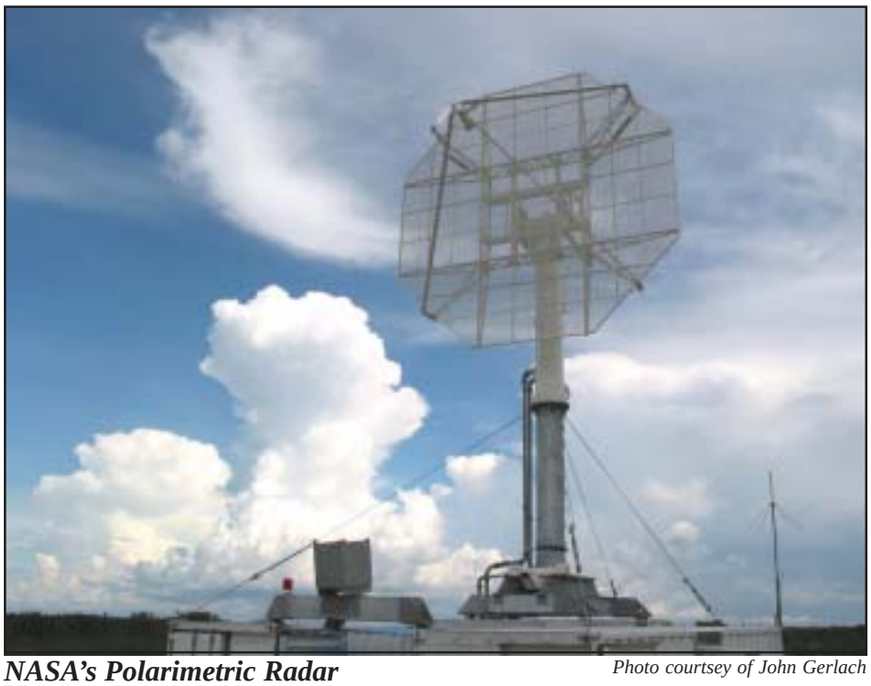
NASA Goes Flat

Rain, snow, ice crystals, and hail are part of a complex process that drives energy circulation in the atmosphere, which in turn helps regulate our planet's climate.

A new NASA radar is helping scientists understand this process by measuring the characteristics of various forms of precipitation within rain and snowstorms.



NASA's Polarimetric Radar *Photo courtsey of John Gerlach*

The NASA Polarimetric Radar (NPOL), developed by a research team from NASA's Goddard Space Flight Center, Wallops Flight Facility, is unique. It is an ultra-modern flat panel radar antenna that is fully portable and self-contained. Hexagonal in shape and 18-feet (5.5 meters) across, it requires no special site preparation and can be set up on a basically flat area anywhere in the world.

"NPOL is NASA's only portable polarimetric precipitation research radar and one of the very few polarimetric weather radars in the world," said Dr. John Gerlach, NPOL Principal Investigator from Wallops. "This radar will allow us to conduct more extensive ground measurements to support orbiting satellites and enhance their data gathering capabilities."

"We are indebted to the vision of Dr. Ramesh Kakar, program scientist for the Tropical Rain Measurement Mission, who foresaw the need for such a unique instrument to meet the future research requirements of the NASA precipitation program and provided the funding to develop it." said Gerlach.

The system is able to operate continuously. During a recent field campaign in Florida, it operated 24 hours a day, 7 days a week for almost three months allowing scientists and engineers to monitor and record all tropical rainfall within a 155 mile (250 kilometer) radius. They measured where and when rain fell and the vital details of the microphysical nature of the storms that produced the rain. Polarimetric weather radars measure both rainfall amounts and physical characteristics of raindrops, such as size.

A revolutionary flat panel radar "dish" is used to transmit and receive signals. Unlike more traditional radars and other polarimetric weather radars that use a parabolic shaped bowl to send and receive radar signals, this new system uses carefully sized engraved dipoles that have been etched into a specially prepared panel, much the same way a circuit board is manufactured.

Each element reflects the incident energy, which is focused on a central feed horn, the small element in front of the radar panel that collects the energy and channels it to the receivers.

The flat panel has significant advantages over its traditional round-shaped cousin. First, it can be easily assembled and disassembled for shipping. Second, since hundreds of symmetrical squares of material between the dipole have been removed from the panels, by precision laser cutting, there is a dramatic reduction in the total mass of the panels. These holes also allow for operation in unusually windy conditions by permitting air to pass through the working structure of the system. In addition, the wind-friendly architecture does not require a radome – a dome shaped structure designed to shield a turning radar dish from the elements. And the need for a massive pedestal to support the entire structure is reduced, dramatically shrinking the total size of the system.

The radar site maintains Internet connectivity with a satellite uplink. Its sensitive computer and radar equipment are cooled with self-contained air conditioning units. Only one person, a radar operator, is required for full-scale operation at any one time, however safety considerations dictate the presence of a second person.

Radar data collected by researchers can be displayed in a variety of ways that use colors to designate specific characteristics. As it sweeps the sky in a circular pattern, the data is collected in a computer program which maps the sky in terms of precipitation, showing a variety of details such as how much water exists at one time in a given volume of sky and whether it is liquid or frozen.

This new, advanced radar system has been used in recent field research experiments and is the largest flat panel radar of its type in use in the world. From these experiments, the space agency is hopeful that new techniques will be developed to better understand the nature of precipitation leading to major insights about the Earth's climate.

Wallops Shorts……

In the news

Winnipeg Free Press
Mysterious Rocket Found, Sent to Winnipeg for Study

Eastern Shore News
NASA Visitor Center Events

Combined Federal Campaign

Fun Day and Chili Cook-Off
November 5, 11:30 a.m.
at the Pavilion

CFC
CARING IS SHARING

The Wallops Mentoring Program

"My mentor was able to view my work situation from a different perspective and repeatedly encouraged me to actively pursue my goal to work in another field. Use of her keen insight and years of experience, enabled me to prepare an Individual Development Plan outlining steps required to reach my goal. The Wallops Mentoring Program was instrumental in my achieving a new career path." (Amy Strong)

The Wallops Mentoring Program is an excellent opportunity for civil service employees to benefit from developing a mentoring relationship. It also is a way to add structure to an existing mentoring partnership. The program allows participants to interact with employees at different levels within the organization, increase organizational awareness, and enhance technical knowledge.

The objective of the Mentoring Program is career development and enhancement. Employees who participate have an opportunity for personal growth that, potentially, can lead to higher job satisfaction, greater efficiency and consideration of career options.

The Office of Human Resources (OHR) is accepting applications for the 2003 Wallops Mentoring Program through December 2, 2002.

Anyone interested in the Wallops program should register online, indicating that you are at Wallops. Go to http://www.mentoringconnection.com

For further information contact Nichole Richmond, Mentoring Program Coordinator at x66-5757 or by e-mail: richmond@pop100.gsfc.nasa.gov.

November is Native American History Month

American Indians and Alaska Natives have played a vital role in the life of our countr. Their many contributions have enhanced the freedom, prosperity, and greatness of America today.

By celebrating National American Indian Heritage month, we remember their contributions and honor the heritage of our continent's first inhabitants.

American Indians and Alaska Natives have contributed greatly to our nation's history and culture.

American Indian Heritage Month reflects our continuing commitment to American Indians and Alaska Native tribal governments as an integral part of the social, political and economic fabric of the United States.

November is National Diabetes Month

More than one million Americans have Type 1 (juvenile) Diabetes—a disease that strikes children suddenly, makes them insulin dependent for life.

Someone is diagnosed with Type 1 Diabetes every hour. It can and does strike adults as well. In Type 1 Diabetes, the pancreas produces little or no insulin, a hormone necessary to sustain life.

Although the causes are not entirely known, scientists believe the body's own immune system attacks and destroys insulin-producing cells in the pancreas. It is not caused by obesity or by eating excessive sugar, which are two common myths.

Type 1 Diabetes
AFFECTS YOUNG CHILDREN: It's one of the most costly, chronic diseases of childhood and one you never outgrow.

INSULIN DOES NOT CURE IT: While insulin allows a person to stay alive, it does not cure diabetes nor does it prevent its eventual and devastating effects: kidney failure, blindness, nerve damage, amputations, heart attack and stroke.

NEEDS CONSTANT ATTENTION: To stay alive, those with Type 1 Diabetes must take multiple insulin injections daily and test their blood sugar by pricking their fingers for blood six or more times per day. While trying to balance insulin injections with their amount of food intake, they must constantly be prepared for potential hypoglycemic (low blood sugar) and hyperglycemic (high blood sugar) reactions, which can be life threatening .

DIFFICULT TO MANAGE: Despite rigorous attention to maintaining a healthy diet, exercise regimen, and always injecting the proper amount of insulin, many other factors can adversely affect a person's blood-sugar control including: stress, hormonal changes, periods of growth, physical activity, medications, illness/infection, and fatigue.

Warning Signs
Even with insulin, Type 1 usually results in a drastic reduction in quality of life and shortens the average life span by 15 years.

Warning signs of Type 1 Diabetes include: extreme thirst, frequent urination, drowsiness or lethargy, increased appetite, sudden weight loss for no reason, sudden vision changes, sugar in urine, fruity odor on breath, heavy or labored breathing, stupor or unconsciousness. These may occur suddenly.

For more information contact The Juvenile Diabetes Research Foundation on 410-823-0073.

Aerobics Club News

The Wallops Aerobics club announces the beginning of a new six-week session starting. Stay in shape for fall activities.

This session we are offering the following class schedule:

Monday
noon to 12:30 p.m. — Toning
5 to 6 p.m. — Step Aerobics/Toning

Tuesday
noon to 12:30 p.m. — Aerobics

Wednesday
noon to 12:30 p.m. — Toning
5 to 6 p.m. — Step Aerobics/Toning

Friday
Noon to 12:30 p.m. — Aerobics
4:40 to 5:40 p.m. — Step Aerobics/Toning

Ta'i Chi class will continue on Thursdays, from 11:30 a.m. to noon in the back of Building F3. Call John Brinton on x1099 for more details.

For more information, call Annette Conger on x2596 or Jeanette Smolinski on x1512, or check out the Wallops Aerobics Club web page at: http://wwr.wff.nasa.gov/WAC/

Could your career use a tune-up?

Individual career coaching by appointment
Date: November 6, 2002
Place: MEC, Room 307

Talk to a career coach about where your career is headed. The Professional Development Center will hold career coaching at Wallops once a month.

Set up an appointment to talk to you individually about any area regarding your career that is of concern to you.

Whether you are contemplating a career change, in need of assistance with resume writing or interviewing techniques, or trying to develop an IDP, a career coach can help.

All appointments are confidential.

Contact Tracey White at x67823 to set up your appointment today!

Inside Wallops is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees. Recent and past issues of *Inside Wallops* also may be found on the NASA Wallops Flight Facility homepage: www.wff.nasa.gov

Editor Betty Flowers